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ABSTRACT

This report evaluates the 1974-75 experimental individualized mathematics program operated as a supplementary activity within the Memphis City Schools curriculum for grades 4-8. This is a compensatory program to meet the needs of students residing in areas where socio-economic conditions contribute to low achievement. From the 4,700 students, random samples were selected for the experimental and control groups. The project staff consisted of one project director, one resource teacher, 104 Title I teachers, and one clerk-typist. The assessment procedures utilized in evaluating the program were based upon process and product evaluation. The process evaluation gave qualitative evidence about the program based upon responses to questionnaires by project teachers and principals, classroom teachers, and parents. Additional qualitative evidence was obtained from a workshop for teachers. Product evaluation was obtained by measuring three performance objectives via the Metropolitan Achievement Test, The Attitude Inventory, and Individual Progress Reports. The report draws the conclusion that all grades achieved two of three objectives set and that students, parents, project teachers, classroom teachers, and principals were very supportive of the program. (JBW)

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# FINAL EVALUATION REPORT

## 1974 - 1975

## TITLE I INDIVIDUALIZED MATHEMATICS PROGRAM

### GRADES 4-8

*DIVISION OF RESEARCH*
*MEMPHIS CITY SCHOOLS*
*MEMPHIS, TENNESSEE 38112*

SE 019 746

# FINAL EVALUATION REPORT

## TITLE I INDIVIDUALIZED MATHEMATICS PROGRAM
## GRADES 4-8

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# PROGRAM DESCRIPTION

## Introduction

The Title I Individualized Mathematics Program was implemented in 44 elementary and 20 junior high schools in grades four through eight. Academic achievement is most severely retarded in an environment where socio-economic conditions contribute to low achievement. Therefore, compensatory educational programs should be provided to meet the special needs of pupils residing in these areas.

Acquiring computation skills and concepts and learning how to read in the area of mathematics are crucial needs of Title I pupils because these abilities are requisite for learning independently and for functioning in school and society. The incidence of learning difficulty in this area is more severe among children in economically-deprived environments, such as Title I attendance zones, than among children in less deprived areas. The Individualized Mathematics Program is designed to provide instruction to meet the special educational needs of elementary and junior high children in grades four through eight.

The Individualized Mathematics Program was operated as a supplementary activity within the framework of the total curriculum. Instruction in project classes was designed to extend and reinforce the regular program in order to meet the educational needs of participating children.

Students were released from their regular classroom for individualized math lessons. Five or six classes were scheduled daily, for periods

of 50/60 minutes. For students who participated in this individualized program, a variety of instructional activities were provided on the basis of diagnostic profiles.

Participants Involved

Pupils in grades 4-8 who resided in Title I attendance areas were eligible to participate in the program provided they met the following educational criteria:

(a) Students who are 1.0 or more years below grade level in mathematics, with preference being given to those pupils in greatest need of intensive remediation for the development of basic mathematics skills and concepts.

(b) Students of normal intelligence were selected.

Fourteen percent (14%) of the pupils assigned to Title I math participated for a second year, upon recommendation by the Title I teacher and subject to the principal's approval. Priority was given to those pupils.

Data for student selection were available from several sources: written referrals from classroom teachers, permanent records, achievement test scores and screening tests. Data from other instruments and/or informal teacher assessment were equally acceptable as evidence of the need for compensatory instruction.

Approximately 4700 students from the sixty-four elementary and junior high schools participated in the Individualized Mathematics Program. A random sample of these students were selected and assigned to an experimental group. A random selection of students were selected and assigned to a control group. This group of students was similar

to the experimental students in sex, academic achievement, poverty levels and grade classification. Students participating in any other instructional Title I project or special education were excluded from the evaluation group. Since all of the teachers for this program were not hired by September, student identification was delayed at a number of locations. Therefore, the control group students could not be selected at the beginning of the academic year. However, all except five teachers were hired as of January, and a control group was selected.

Staff

The Individualized Mathematics staff is composed of one project director, one resource teacher, one hundred four Title I teachers and one clerk-typist. Classroom teachers were asked to assist or to advise Title I teachers regarding student selection, diagnosis, prescription, and evaluation. All personnel were concerned with securing parental support for instructional goals. Activities and assignments, both in the math class and the regular class, related to and were appropriate for meeting the educational needs of each student.

# TITLE I INDIVIDUALIZED MATHEMATICS PROGRAM (IMS)
## ENROLLMENT DATA

1. Total number of students referred to IMS classes: 5805

2. Total number of students enrolled in the IMS classes at each grade level:

   a. Grade 4 1327

   b. Grade 5 1301

   c. Grade 6 1116

   d. Grade 7 576

   e. Grade 8 394

   Total 4714

3. Total number of boys enrolled in IMS: 2452 (52%)

4. Total number of girls enrolled in IMS: 2262 (48%)

5. Number of students participating in IMS for a second year: 654 (14%)

6. Number of students in IMS who are also participating in Title I Reading Improvement or Sequential Reading Development: 777 (16%)

## EVALUATION STRATEGIES

The assessment procedures utilized in evaluating the Individualized Mathematics Program were based on process and product evaluation. The process evaluation involved various monitoring procedures and techniques designed to give qualitative evidence about the program. The product evaluation provided data pertaining to the success of the program in terms of the performance objectives as measured at the end of the year. Monitoring procedures were the responsibility of the project director, the resource teacher, the research assistant, and the principals at each location.

## ANALYSIS OF DATA

### Instruments Used

The following instruments were used to measure student progress and to assess the ideas and opinions of teachers, principals and parents in the Title I Individualized Mathematics Program.

A. The Mathematics Subtests of the Metropolitan Achievement Test (MAT) were administered to separate groups of randomly selected fourth, fifth, sixth, seventh, and eighth grade students in September, 1974 and March, 1975.

B. The Attitude Inventory is a self report device designed to assess the students' self concept in relation to themselves and the mathematics program.

C. Individual Progress Reports were designed to assess and measure the students' progress in each content area from the beginning to the end of the academic year.

D. Title I Math Questionnaire for Project Teachers and Principals - these questionnaires were developed to assess the opinions of project teachers and principals concerning the effectiveness of the program.

E. Title I Math Questionnaire for Classroom Teachers - this questionnaire was designed to assess the opinions of teachers whose students attend Title I math relative to the success of the program.

F. Title I Math Questionnaire for Parents - this questionnaire was designed to assess the opinions and recommendations of parents of children in the program relative to the program's success.

G. The Title I Math Workshop for Teachers - this instrument was administered to each Title I math teacher at the completion of each workshop to determine the success of the presentations.

## Analysis of Student Objectives

### Objective 1

By the end of the school year, the mean accomplishment of a random sample of students in the Individualized Mathematics Program will be the successful completion of 18 or more content strand units included in the program. (Sixteen units is equated to one year's gain in knowledge of mathematics.)

## Assessment Procedures

Each student was given a placement test to identify his beginning point at any of nine levels of difficulty in each of the eleven content areas. These eleven areas were Numeration, Addition, Subtraction, Multiplication, Division, Fractions, Applications, Money, Time, Measurement, and Geometry. The results of the placement testing were recorded on a student profile form that showed student competencies in each content area and at the defined level of difficulty. As each student

mastered skill work in each of the levels of difficulty, he moved from lower levels to higher levels.

Progress reports were completed by each Title I math teacher on a random sample of students. Results of these progress reports indicate this objective was met by all grades participating in the program (Grades 4-8). The fourth grade students had a mean accomplishment of 21.8 units, fifth graders had a mean accomplishment of 25.7 units, and the sixth graders had a mean accomplishment of 25.3 units. The seventh and eighth graders had mean accomplishments of 22.9 units and 25.6 units, respectively. The fifth and eighth grade students had the highest mean accomplishments of all grades participating.

Figures 1-5 of this report show the percent of students who completed 1-6 units, 7-12 units, 13-18 units, 19-24 units, 25-30 units, 31-36 units, 37-42 units and 42 or more units in Grades 4-8 respectively. For example, Figure 1 shows that 34% of the fourth grade students completed 19 to 24 units.

FIGURE 1

UNITS COMPLETED BY A RANDOM SAMPLE OF PARTICIPANTS
IN IMS AT THE END OF THE ACADEMIC YEAR
GRADE 4

(n = 94)

Mean Accomplishment - 21.8

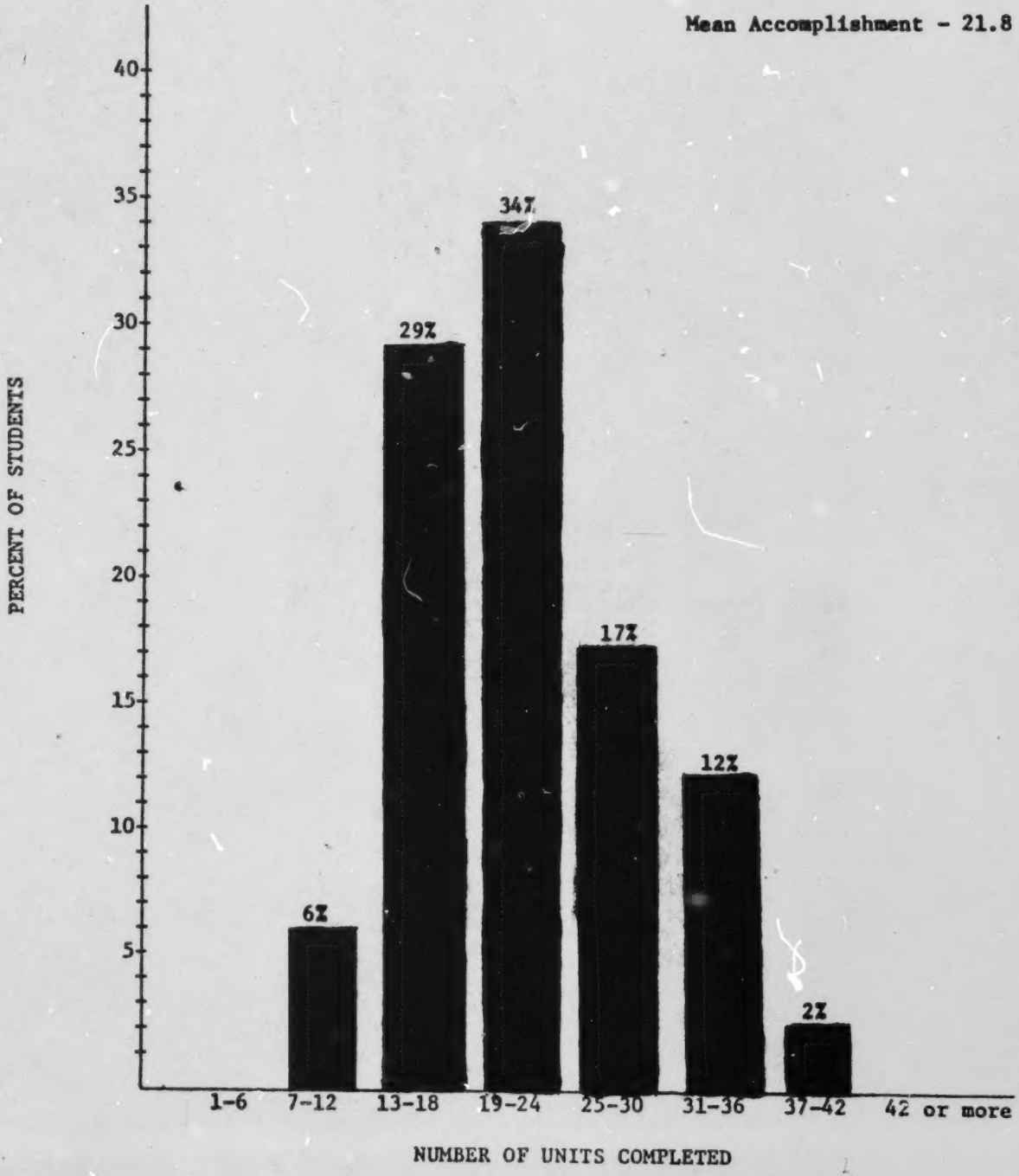


FIGURE 2

UNITS COMPLETED BY A RANDOM SAMPLE OF PARTICIPANTS
IN IMS AT THE END OF THE ACADEMIC YEAR
GRADE 5

(n = 87)

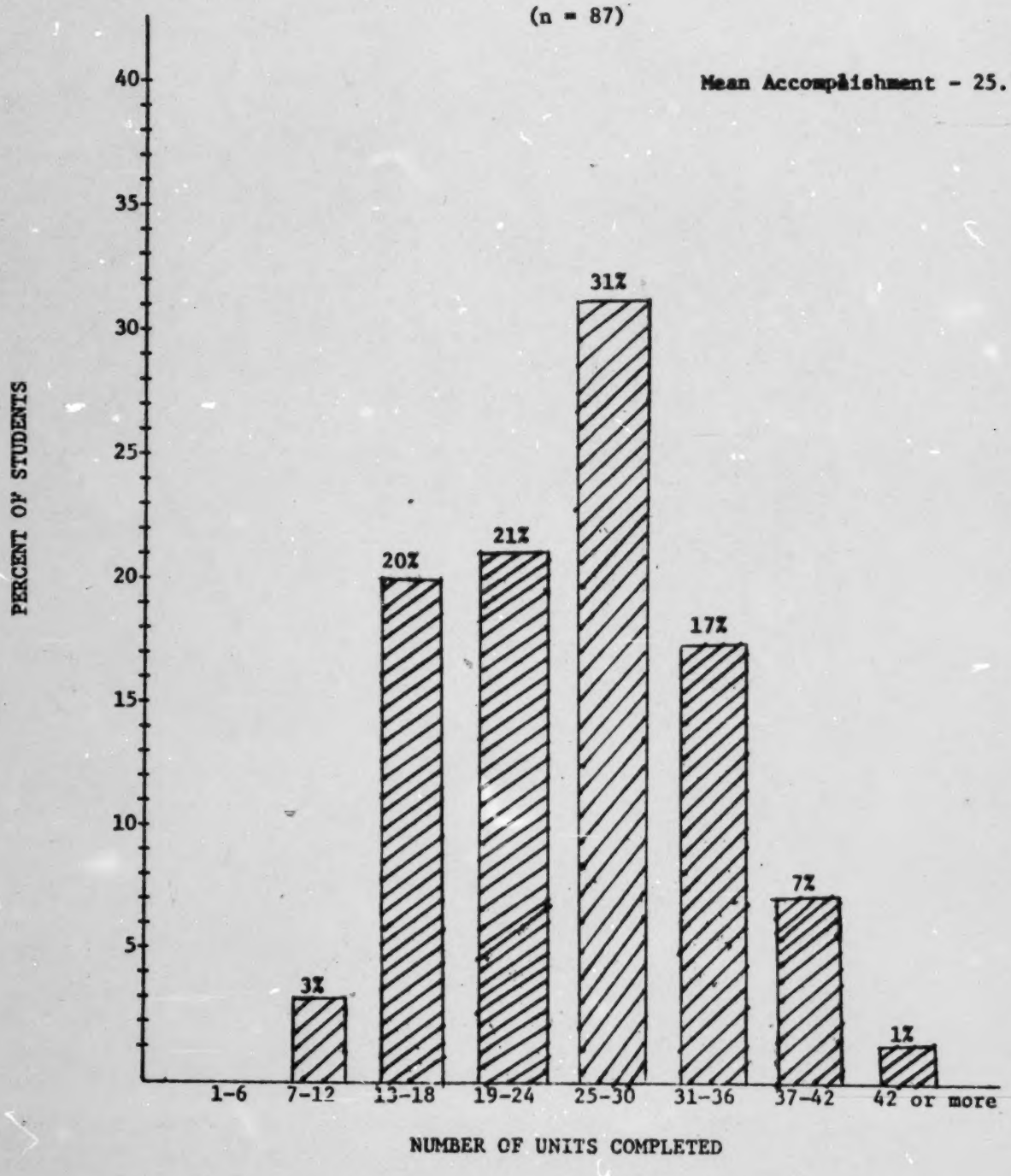


FIGURE 3

UNITS COMPLETED BY A RANDOM SAMPLE OF PARTICIPANTS
IN IMS AT THE END OF THE ACADEMIC YEAR
GRADE 6

(n = 93)

Mean Accomplishment - 25.3

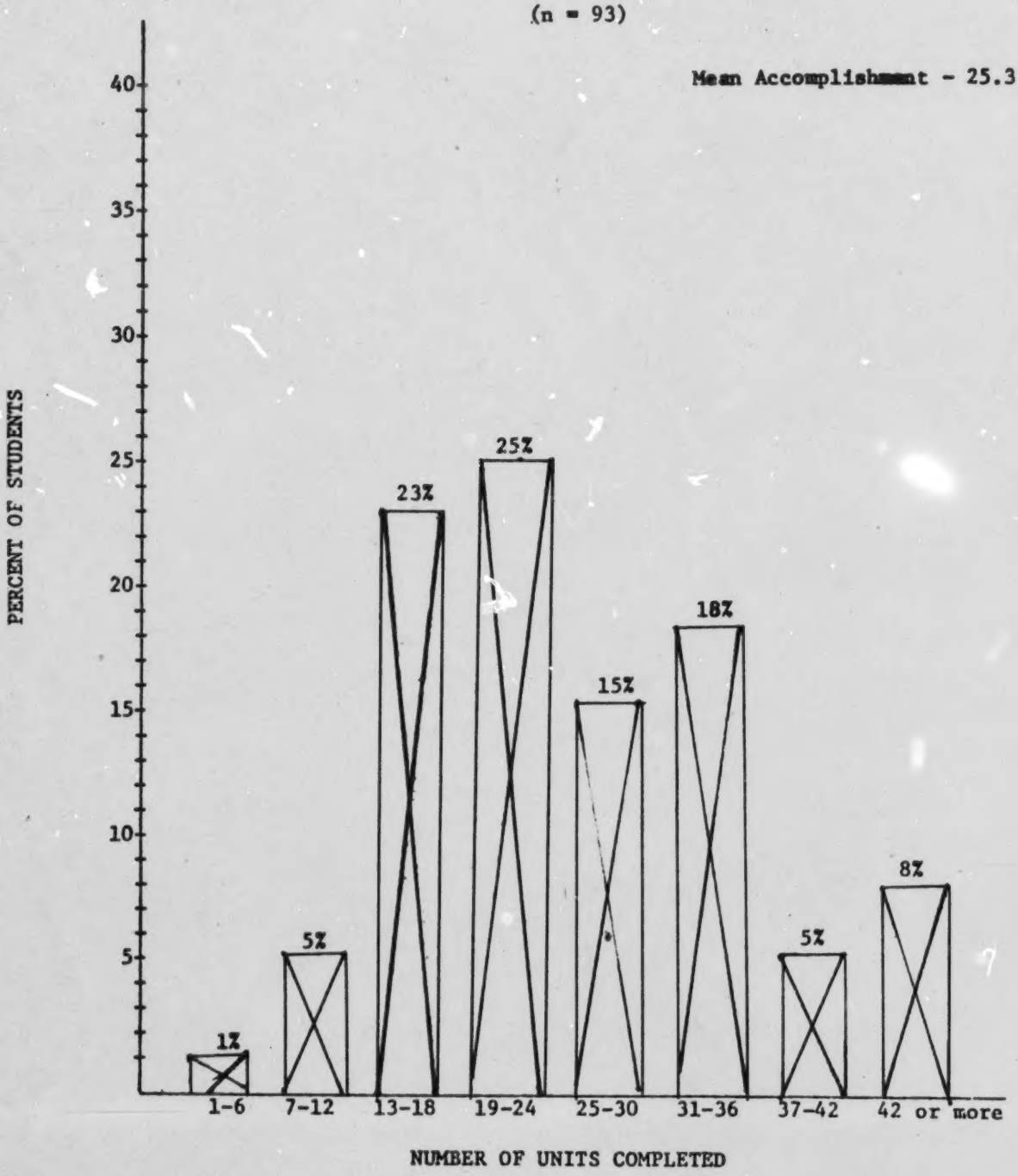


FIGURE 4

UNITS COMPLETED BY A RANDOM SAMPLE OF PARTICIPANTS
IN IMS AT THE END OF THE ACADEMIC YEAR
GRADE 7

(n = 7[illegible])

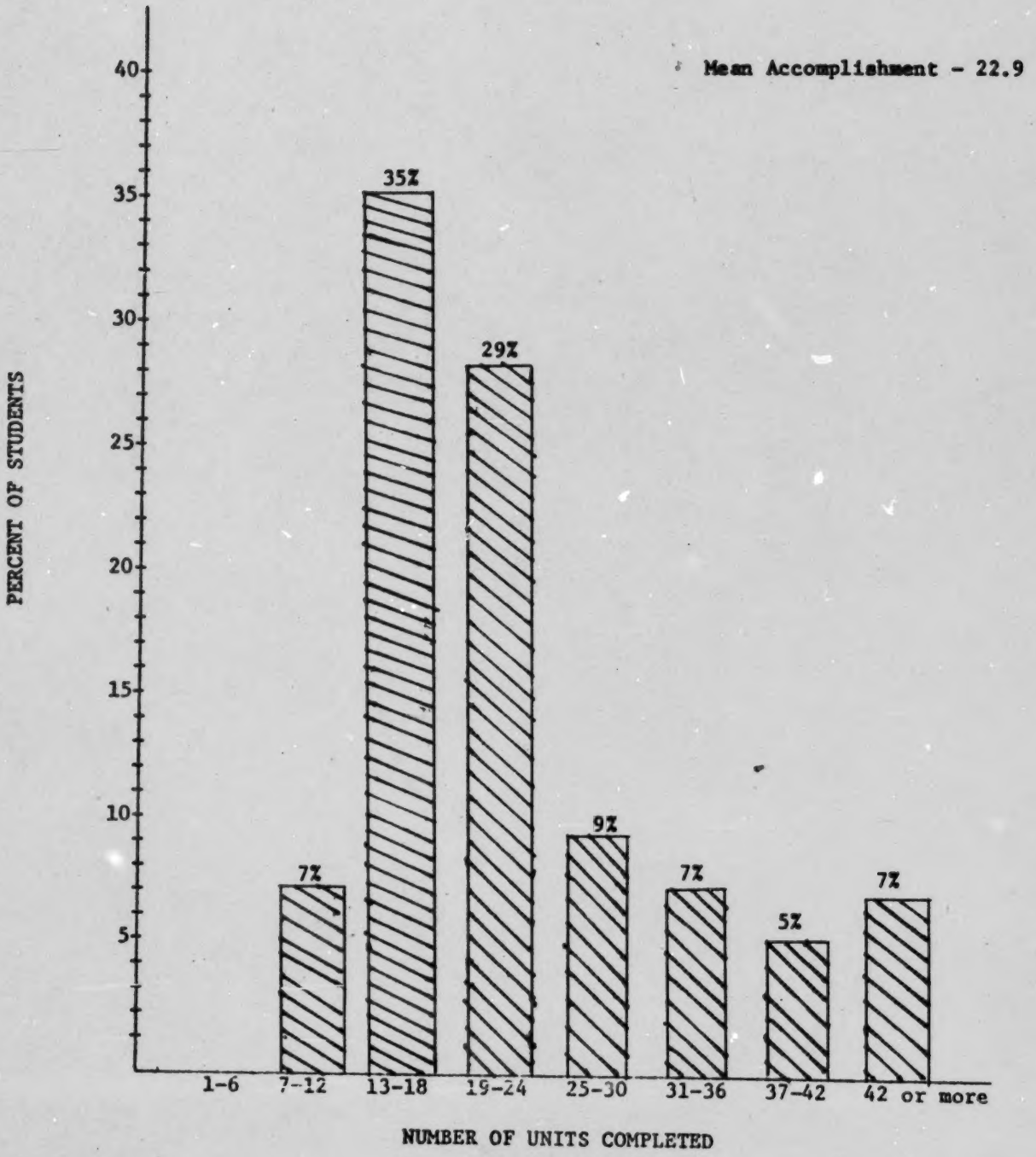


FIGURE 5

UNITS COMPLETED BY A RANDOM SAMPLE OF PARTICIPANTS
IN IMS AT THE END OF THE ACADEMIC YEAR
GRADE 8

(n = 74)

Mean Accomplishment - 25.6

Objective 2

By the end of the school year, a random sample of students in the Individualized Mathematics Program will demonstrate a knowledge of mathematics by showing statistically significant gains at the .05 level of significance compared to a control group as measured by a standardized test in mathematics.

Assessment Procedures

The mathematics subtests of the Metropolitan Achievement Test were used to assess this objective. These subtests were administered to both experimental and control groups in September, 1974 and March, 1975.

Tables 1-4 of this report show the mean standard scores, standard deviations of standard scores, mean grade equivalents, and gain in months on each of the four math subtests for both groups (experimental and control).

The analysis of covariance model was used on the Total Mathematics standard scores to determine if there were significant differences between the experimental and control groups for each grade level participating in the program. This design allows the evaluator to statistically equate the two groups with respect to one or more variables which are relevant to the dependent variable (mathematics achievement).

In this report, pretest scores on each of the subtests were considered as the control variables, and posttest scores on the subtests were considered as the criterion variables. Thus, it was possible to adjust a posttest mean (criterion variable) on any subtest to compensate for any differences in the pretest mean (control variable).

Tables 5-14 reflect the results of the analysis of covariance model showing the posttest adjusted and unadjusted means, and the F

ratio for both groups. Experimental students in grades 4-7 made gains but experimental grade 6 was the only grade level that made statistically significant gains at the .05 level of significance when compared to the control group students.

Figures 6-10 of this report show the pre and posttest grade equivalents for both experimental and control group students for each grade level on the Total Mathematics Subtest of the Metropolitan Achievement Test.

TABLE 1

MEAN STANDARD SCORES, STANDARD DEVIATIONS OF STANDARD SCORES, MEAN GRADE EQUIVALENTS, AND GAIN IN MONTHS ON THE MATH COMPUTATION SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR IMS STUDENTS (E) AND CONTROL STUDENTS (C)

| Grade & Group | Pretest Mean Standard Score | Pretest Standard Deviation | Mean Grade Equivalent | Posttest Mean Standard Score | Posttest Standard Deviation | Mean Grade Equivalent | N | Gain in Months |
|---|---|---|---|---|---|---|---|---|
| 4E | 57.0 | 7.7 | 3.1 | 69.7 | 9.6 | 4.2 | 84 | 11 |
| 4C | 54.3 | 7.0 | 2.8 | 66.3 | 8.8 | 3.9 | 61 | 11 |
| 5E | 67.8 | 10.9 | 4.1 | 77.9 | 6.9 | 5.0 | 84 | 9 |
| 5C | 67.3 | 7.6 | 4.0 | 76.3 | 7.2 | 4.9 | 85 | 9 |
| 6E | 75.8 | 8.6 | 4.8 | 83.0 | 10.1 | 5.6 | 85 | 8 |
| 6C | 75.7 | 7.2 | 4.8 | 80.0 | 7.6 | 5.3 | 87 | 5 |
| 7E | 77.7 | 8.8 | 5.0 | 81.4 | 10.0 | 5.4 | 75 | 4 |
| 7C | 74.3 | 7.8 | 4.6 | 81.3 | 8.8 | 5.4 | 70 | 8 |
| 8E | 81.3 | 10.6 | 5.4 | 81.5 | 10.1 | 5.5 | 67 | 1 |
| 8C | 81.3 | 8.2 | 5.4 | 82.2 | 8.6 | 5.5 | 67 | 1 |

TABLE 2

MEAN STANDARD SCORES, STANDARD DEVIATIONS OF STANDARD SCORES, MEAN GRADE EQUIVALENTS, AND GAIN IN MONTHS ON THE MATH CONCEPTS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR IMS STUDENTS (E) AND CONTROL STUDENTS (C)

| Grade & Group | Pretest Mean Standard Score | Pretest Standard Deviation | Mean Grade Equivalent | Posttest Mean Standard Score | Posttest Standard Deviation | Mean Grade Equivalent | N | Gain in Months |
|---|---|---|---|---|---|---|---|---|
| 4E | 55.2 | 7.3 | 2.9 | 63.4 | 8.9 | 3.4 | 84 | 5 |
| 4C | 51.6 | 6.2 | 2.6 | 60.7 | 8.4 | 3.3 | 61 | 7 |
| 5E | 63.8 | 10.0 | 3.5 | 71.7 | 6.2 | 4.4 | 84 | 9 |
| 5C | 62.0 | 6.3 | 3.3 | 69.6 | 8.0 | 4.1 | 85 | 8 |
| 6E | 71.5 | 8.7 | 4.3 | 76.4 | 8.9 | 4.9 | 85 | 6 |
| 6C | 69.4 | 5.4 | 4.1 | 71.4 | 6.7 | 4.2 | 87 | 1 |
| 7E | 71.2 | 8.6 | 4.2 | 75.1 | 8.9 | 4.8 | 75 | 6 |
| 7C | 66.9 | 8.1 | 3.8 | 74.2 | 7.0 | 4.7 | 70 | 9 |
| 8E | 75.6 | 8.9 | 4.9 | 77.1 | 8.8 | 5.1 | 67 | 2 |
| 8C | 72.8 | 7.8 | 4.5 | 75.2 | 5.8 | 4.8 | 67 | 3 |

TABLE 3

MEAN STANDARD SCORES, STANDARD DEVIATIONS OF STANDARD SCORES, MEAN GRADE EQUIVALENTS, AND GAIN IN MONTHS ON THE MATH PROBLEM SOLVING SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR IMS STUDENTS (E) AND CONTROL STUDENTS (C)

| Grade & Group | Pretest Mean Standard Score | Pretest Standard Deviation | Mean Grade Equivalent | Posttest Mean Standard Score | Posttest Standard Deviation | Mean Grade Equivalent | N | Gain in Months |
|---|---|---|---|---|---|---|---|---|
| 4E | 58.4 | 8.5 | 3.0 | 64.6 | 10.0 | 3.4 | 84 | 4 |
| 4C | 53.0 | 7.3 | 2.7 | 61.6 | 11.6 | 3.2 | 61 | 5 |
| 5E | 64.0 | 11.7 | 3.3 | 70.6 | 9.5 | 4.0 | 84 | 7 |
| 5C | 62.3 | 8.0 | 3.2 | 69.3 | 7.5 | 3.8 | 85 | 6 |
| 6E | 70.5 | 11.4 | 4.0 | 76.8 | 9.7 | 4.7 | 85 | 7 |
| 6C | 70.9 | 6.0 | 4.0 | 74.7 | 7.3 | 4.5 | 87 | 5 |
| 7E | 73.3 | 10.9 | 4.3 | 78.8 | 8.8 | 5.1 | 75 | 8 |
| 7C | 71.9 | 10.2 | 4.1 | 76.8 | 8.4 | 4.7 | 70 | 6 |
| 8E | 75.6 | 9.5 | 4.6 | 79.7 | 8.8 | 5.2 | 67 | 6 |
| 8C | 76.8 | 12.2 | 4.7 | 77.4 | 11.1 | 4.8 | 67 | 1 |

TABLE 4

MEAN STANDARD SCORES, STANDARD DEVIATIONS OF STANDARD SCORES, MEAN GRADE EQUIVALENTS, AND GAIN IN MONTHS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR IMS STUDENTS (E) AND CONTROL STUDENTS (C)

| Grade & Group | Pretest Mean Standard Score | Pretest Standard Deviation | Mean Grade Equivalent | Posttest Mean Standard Score | Posttest Standard Deviation | Mean Grade Equivalent | N | Gain in Months |
|---|---|---|---|---|---|---|---|---|
| 4E | 59.7 | 7.1 | 3.0 | 69.7 | 8.4 | 3.7 | 84 | 7 |
| 4C | 55.5 | 5.6 | 2.6 | 66.7 | 8.1 | 3.5 | 61 | 9 |
| 5E | 69.3 | 10.9 | 3.6 | 78.6 | 5.7 | 4.6 | 84 | 10 |
| 5C | 67.8 | 6.4 | 3.6 | 76.7 | 6.0 | 4.4 | 85 | 8 |
| 6E | 77.3 | 8.5 | 4.4 | 83.1 | 8.3 | 5.1 | 85 | 7 |
| 6C | 76.8 | 4.8 | 4.4 | 80.1 | 5.5 | 4.7 | 87 | 3 |
| 7E | 78.2 | 7.8 | 4.5 | 82.6 | 8.6 | 5.1 | 75 | 6 |
| 7C | 74.3 | 6.5 | 4.1 | 81.6 | 7.0 | 4.9 | 70 | 8 |
| 8E | 81.6 | 9.1 | 4.9 | 84.2 | 8.5 | 5.2 | 67 | 3 |
| 8C | 81.3 | 6.9 | 4.8 | 83.5 | 6.4 | 5.2 | 67 | 4 |

TABLE 5

ANALYSIS OF COVARIANCE FOR MATHEMATICS ACHIEVEMENT DIFFERENCES BETWEEN IMS STUDENTS AND CONTROL STUDENTS CONTROLLING FOR PRIOR MATHEMATICS ACHIEVEMENT (GRADE 4)

| Source of Variation | Adjusted Sums of Squares | Degrees of Freedom | Mean Square | F Ratio |
|---|---|---|---|---|
| Between Treatments | 1.0679 | 1 | 1.0679 | 0.0233[NS] |
| Regression Coefficient | 6.6978 | 1 | 6.6978 | |
| Within Treatments | 6491.6827 | 141 | 46.0403 | |
| Residual or Error | 6498.3805 | 142 | 45.7632 | |
| Total | 6499.4485 | 143 | | |

NS - Not Significant

TABLE 6

PRETEST STANDARD SCORE MEANS, POSTTEST ADJUSTED AND UNADJUSTED STANDARD SCORE MEANS FOR IMS GROUP AND CONTROL GROUP (GRADE 4)

| | n | Criterion Post-Achievement Adjusted | Criterion Post-Achievement Unadjusted | Control Pretest Achievement |
|---|---|---|---|---|
| IMS Group | 84 | 68.4 | 69.7 | 59.7 |
| Control Group | 61 | 68.6 | 66.8 | 55.5 |

TABLE 7

ANALYSIS OF COVARIANCE FOR MATHEMATICS ACHIEVEMENT DIFFERENCES BETWEEN IMS STUDENTS AND CONTROL STUDENTS CONTROLLING FOR PRIOR MATHEMATICS ACHIEVEMENT (GRADE 5)

| Source of Variation | Adjusted Sums of Squares | Degrees of Freedom | Mean Square | F Ratio |
|---|---|---|---|---|
| Between Treatments | 98.5249 | 1 | 98.5249 | 3.2436[NS] |
| Regression Coefficient | 43.1178 | 1 | 43.1178 | |
| Within Treatments | 4999.0552 | 165 | 30.2973 | |
| Residual or Error | 5042.1731 | 166 | 30.3745 | |
| Total | 5140.6980 | 167 | | |

NS - Not Significant

TABLE 8

PRETEST STANDARD SCORE MEANS, POSTTEST ADJUSTED AND UNADJUSTED STANDARD SCORE MEANS FOR IMS GROUP AND CONTROL GROUP (GRADE 5)

| | | Criterion Post-Achievement | | Control Pretest Achievement |
|---|---|---|---|---|
| | n | Adjusted | Unadjusted | |
| IMS Group | 84 | 78.4 | 78.6 | 69.3 |
| Control Group | 85 | 76.9 | 76.7 | 67.8 |

TABLE 9

ANALYSIS OF COVARIANCE FOR MATHEMATICS ACHIEVEMENT DIFFERENCES BETWEEN IMS STUDENTS AND CONTROL STUDENTS CONTROLLING FOR PRIOR MATHEMATICS ACHIEVEMENT (GRADE 6)

| Source of Variation | Adjusted Sums of Squares | Degrees of Freedom | Mean Square | F Ratio |
|---|---|---|---|---|
| Between Treatments | 301.7084 | 1 | 301.7084 | 10.8678* |
| Regression Coefficient | 26.4835 | 1 | 26.4835 | |
| Within Treatments | 4665.2080 | 168 | 27.7690 | |
| Residual or Error | 4691.6916 | 169 | 27.7614 | |
| Total | 4993.4000 | 170 | | |

* $p < .05$

TABLE 10

PRETEST STANDARD SCORE MEANS, POSTTEST ADJUSTED AND UNADJUSTED STANDARD SCORE MEANS FOR IMS GROUP AND CONTROL GROUP (GRADE 6)

| | n | Criterion Post-Achievement Adjusted | Criterion Post-Achievement Unadjusted | Control Pretest Achievement |
|---|---|---|---|---|
| IMS Group | 85 | 83.0 | 83.1 | 77.3 |
| Control Group | 87 | 80.3 | 80.1 | 76.8 |

TABLE 11

ANALYSIS OF COVARIANCE FOR MATHEMATICS ACHIEVEMENT DIFFERENCES BETWEEN IMS STUDENTS AND CONTROL STUDENTS CONTROLLING FOR PRIOR MATHEMATICS ACHIEVEMENT (GRADE 7)

| Source of Variation | Adjusted Sums of Squares | Degrees of Freedom | Mean Square | F Ratio |
|---|---|---|---|---|
| Between Treatments | 47.5131 | 1 | 47.5131 | .5731[NS] |
| Regression Coefficient | .1505 | 1 | .1505 | |
| Within Treatments | 6365.3638 | 141 | 45.1444 | |
| Residual or Error | 6365.5143 | 142 | 44.8275 | |
| Total | 6413.0275 | 143 | | |

NS - Not Significant

TABLE 12

PRETEST STANDARD SCORE MEANS, POSTTEST ADJUSTED AND UNADJUSTED STANDARD SCORE MEANS FOR IMS GROUP AND CONTROL GROUP (GRADE 7)

| | n | Criterion Post-Achievement Adjusted | Criterion Post-Achievement Unadjusted | Control Pretest Achievement |
|---|---|---|---|---|
| IMS Group | 75 | 81.7 | 82.7 | 78.2 |
| Control Group | 70 | 82.8 | 81.6 | 74.3 |

TABLE 13

ANALYSIS OF COVARIANCE FOR MATHEMATICS ACHIEVEMENT DIFFERENCES BETWEEN IMS STUDENTS AND CONTROL STUDENTS CONTROLLING FOR PRIOR MATHEMATICS ACHIEVEMENT (GRADE 8)

| Source of Variation | Adjusted Sums of Squares | Degrees of Freedom | Mean Square | F Ratio |
|---|---|---|---|---|
| Between Treatments | 8.6826 | 1 | 8.6826 | .2262[NS] |
| Regression Coefficient | .1278 | 1 | .1278 | |
| Within Treatments | 5028.2931 | 131 | 38.6791 | |
| Residual or Error | 5028.4209 | 132 | 38.3848 | |
| Total | 5037.1036 | 133 | | |

NS - Not Significant

TABLE 14

PRETEST STANDARD SCORE MEANS, POSTTEST ADJUSTED AND UNADJUSTED STANDARD SCORE MEANS FOR IMS GROUP AND CONTROL GROUP (GRADE 8)

| | | Criterion Post-Achievement | | Control Pretest Achievement |
|---|---|---|---|---|
| | n | Adjusted | Unadjusted | |
| IMS Group | 67 | 84.1 | 84.2 | 81.6 |
| Control Group | 67 | 84.0 | 83.5 | 81.3 |

FIGURE 6

MEAN GRADE EQUIVALENTS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR FOURTH GRADE IMS STUDENTS AND CONTROL STUDENTS

(FALL, 1974 and SPRING, 1975)

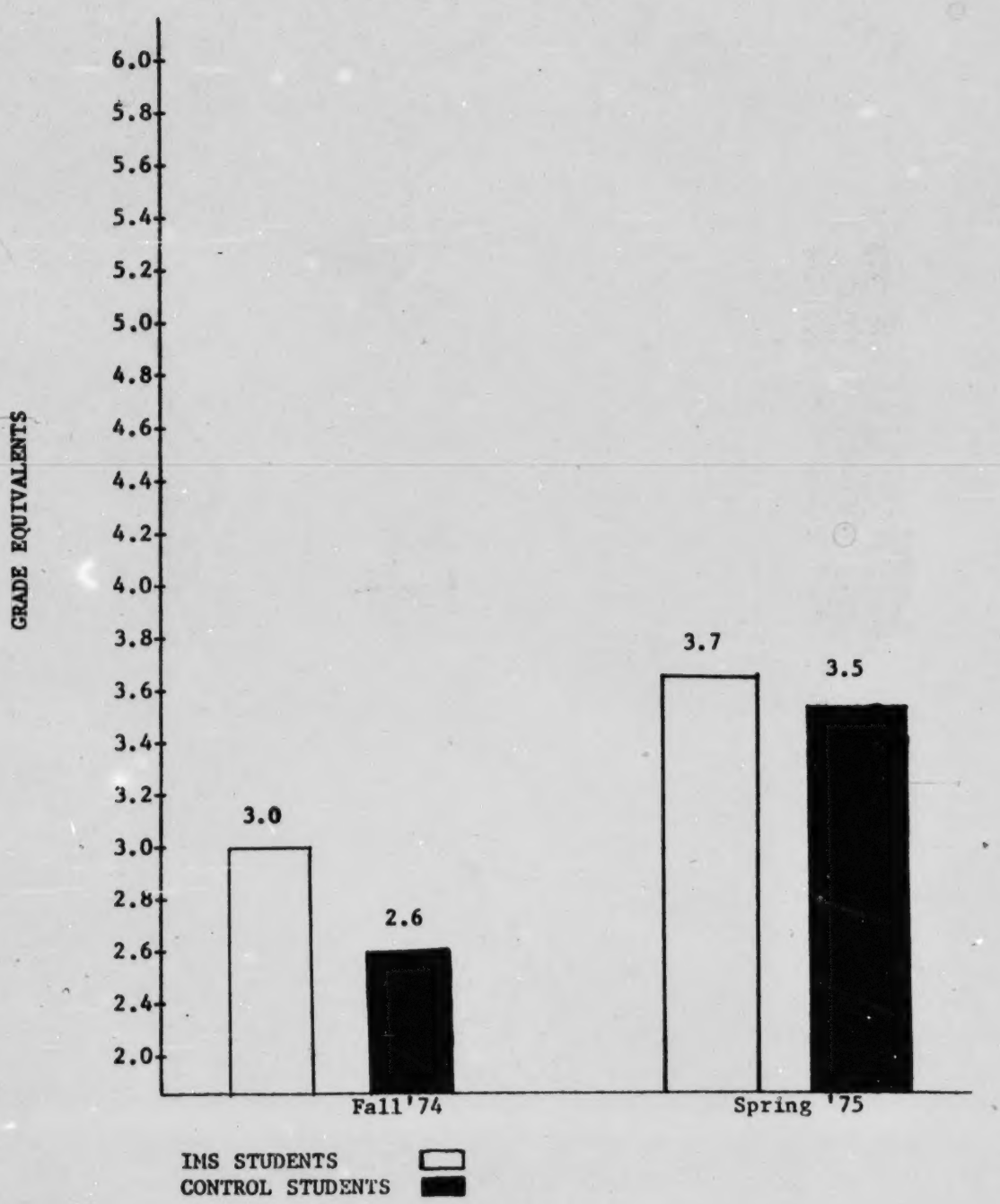


FIGURE 7

MEAN GRADE EQUIVALENTS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR FIFTH GRADE IMS STUDENTS AND CONTROL STUDENTS

(FALL, 1974 and SPRING, 1975)

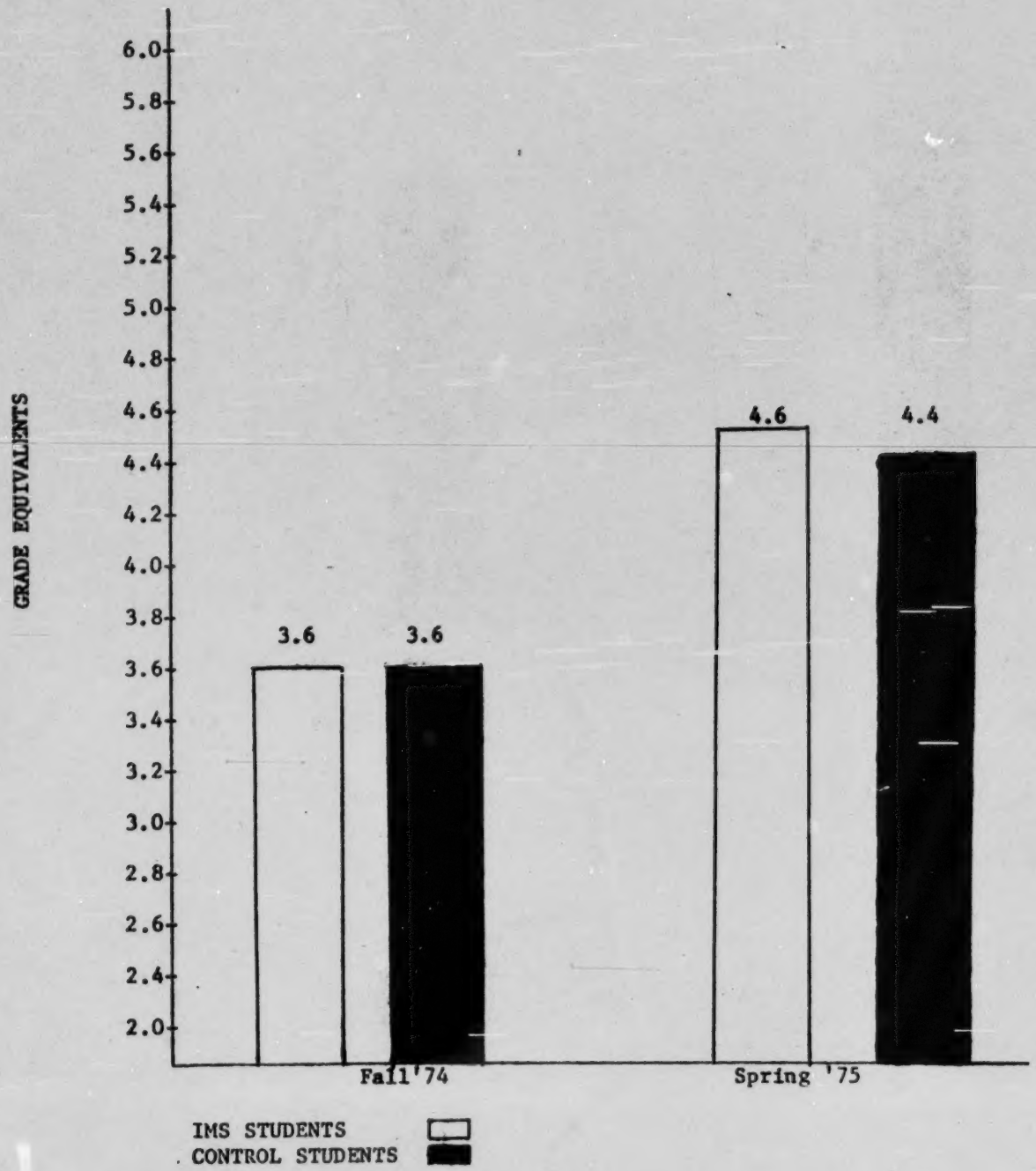


FIGURE 8

MEAN GRADE EQUIVALENTS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR SIXTH GRADE IMS STUDENTS AND CONTROL STUDENTS

(FALL, 1974 and SPRING, 1975)

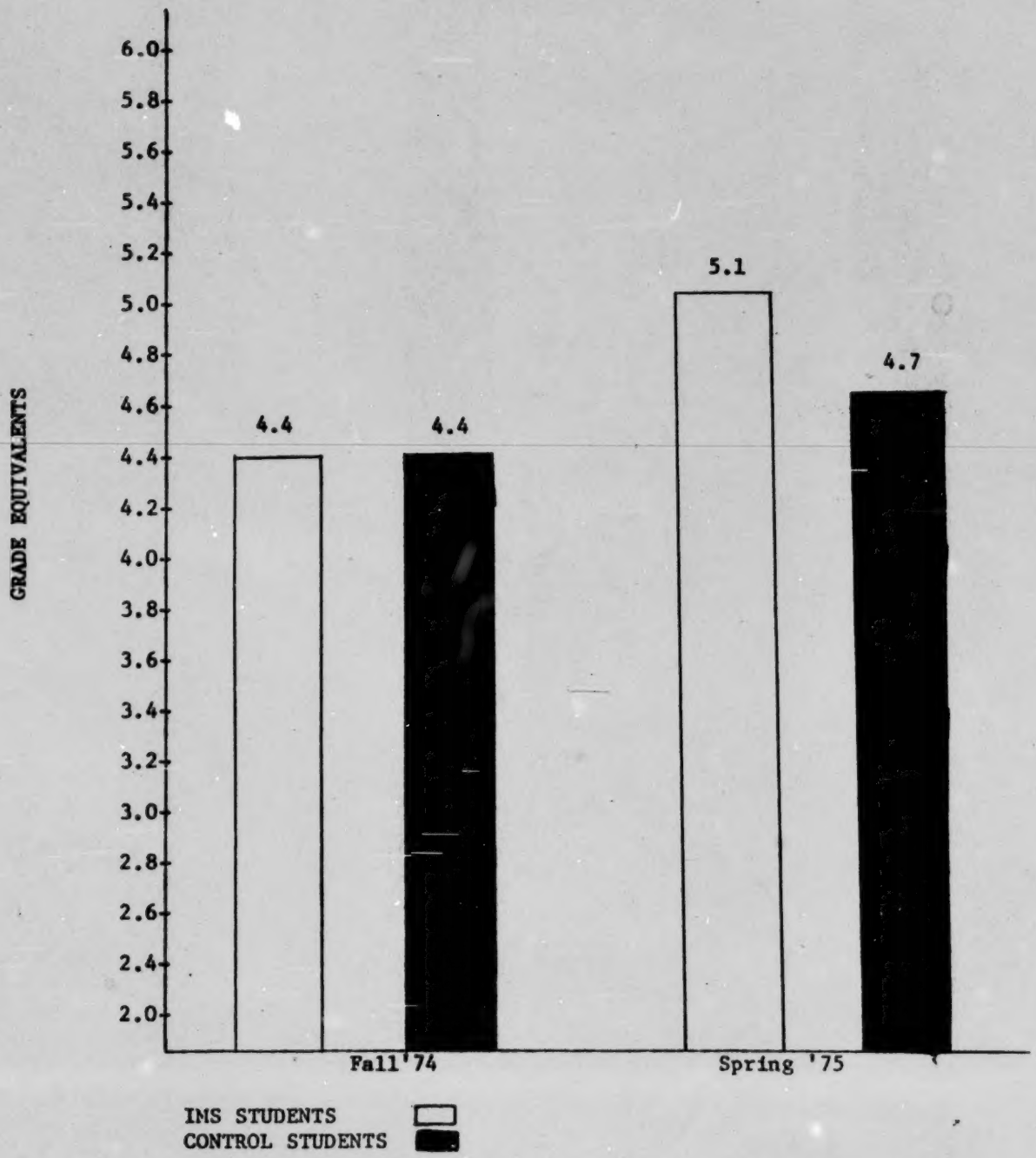


FIGURE 9

MEAN GRADE EQUIVALENTS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR SEVENTH GRADE IMS STUDENTS AND CONTROL STUDENTS

(FALL, 1974 and SPRING, 1975)

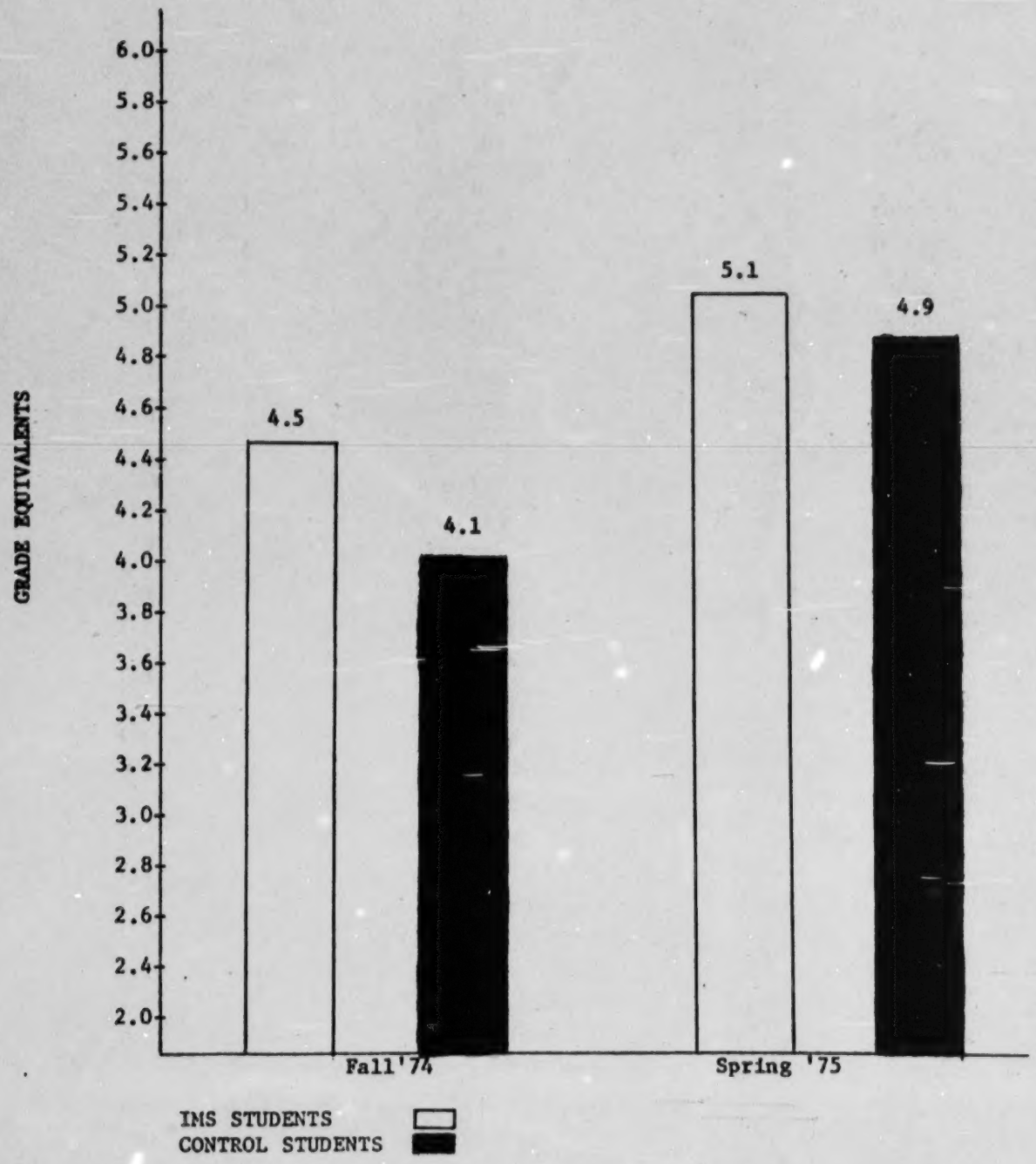
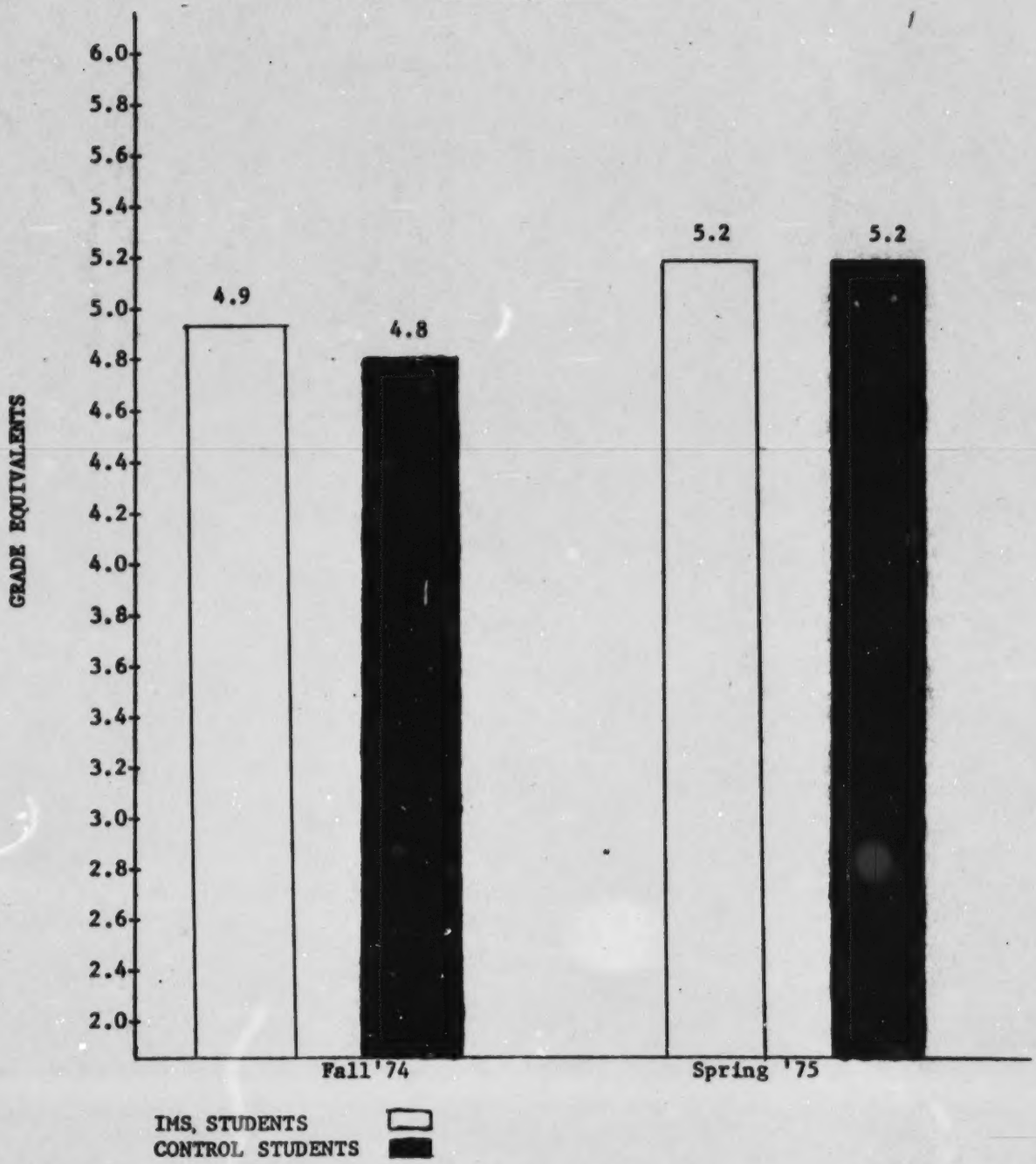


FIGURE 10

MEAN GRADE EQUIVALENTS ON THE TOTAL MATHEMATICS SUBTEST OF THE METROPOLITAN ACHIEVEMENT TEST FOR EIGHTH GRADE IMS STUDENTS AND CONTROL STUDENTS

(FALL, 1974 and SPRING, 1975)



Objective 3

By the end of the school year, 75% of a random sample of students in the Individualized Mathematics Program will demonstrate positive attitudes toward themselves and the mathematics program as measured by a locally-constructed instrument.

Assessment Procedures

This objective was measured by an Attitude Inventory administered to the experimental group at the end of the academic year to determine whether they demonstrated positive attitudes toward themselves and the mathematics program. The inventory consisted of thirty-five (35) statements in which the students answered "true" or "false." Ninety-four percent (94%) of the fourth grade students had a score of 22 or more, 94% of the fifth graders had a score of 22 or more, 92% of the sixth graders had a score of 22 or more, 85% of the seventh graders had a score of 22 or more, and 90% of the eighth graders had a score of 22 or more. Table 15 of this report shows the mean scores and standard deviations for all five grades respectively. These results indicate that 91% of the students demonstrated positive attitudes toward themselves and the mathematics program.

TABLE 15

MEAN SCORES AND STANDARD DEVIATIONS ON THE ATTITUDE INVENTORY

| Grade | Mean | Standard Deviation | N |
|---|---|---|---|
| 4 | 25.9 | 4.6 | 94 |
| 5 | 25.8 | 4.1 | 92 |
| 6 | 25.7 | 4.2 | 100 |
| 7 | 24.1 | 4.3 | 98 |
| 8 | 24.7 | 4.0 | 91 |

## Analysis of the Teachers', Principals', and Parents' Responses to Questionnaires

(1) Title I Math Questionnaire for Project Teachers

This questionnaire was administered to all elementary and secondary teachers in the program. These data indicated the following major conclusions:

Elementary Level

a. Ninety-seven percent (97%) of the elementary teachers rated the program design for meeting the remedial needs of pupils as excellent (48%) and good (49%).

b. Seventy-nine percent (79%) of the elementary teachers rated the student selection criteria as excellent (23%) and good (56%).

c. Ninety-two percent (92%) of the elementary teachers rated the pupil attitudes toward the program as excellent (31%) and good (61%).

d. Eighty-six percent (86%) of the elementary teachers rated the cooperation with regular classroom teachers as excellent (26%) and good (60%).

e. All of the teachers responding indicated they would like to continue working in this program.

Secondary Level

a. Ninety percent (90%) of the secondary teachers rated the program design for meeting remedial needs of pupils as excellent (60%) and good (30%).

b. All of the secondary teachers rated the student selection criteria as good (50%) and fair (50%).

c. Eighty percent (80%) of the secondary teachers rated the pupil attitudes toward the program as excellent (10%) and good (70%).

d. Ninety-five percent (95%) of the secondary teachers rated the cooperation with regular classroom teachers as excellent (60%) and good (35%).

e. All but one of the secondary teachers would like to continue working in this program.

(2) Title I Math Questionnaire for Principals

This questionnaire was administered to all elementary and secondary principals involved with the program. The following major conclusions were drawn:

Elementary Level

a. Ninety-seven percent (97%) of the elementary principals rated the program design for meeting remedial needs of pupils as excellent (38%) and good (59%).

b. Ninety-seven percent (97%) of the elementary principals rated the effectiveness of individualized instructional procedures as excellent (38%) and good (59%).

c. Ninety-two percent (92%) of the elementary principals rated the student selection criteria as excellent (27%) and good (65%).

d. Ninety-one percent (91%) of the elementary principals rated the program implementation in Title I math classrooms as excellent (32%) and good (59%).

e. Eighty-six percent (86%) of the elementary principals rated the pupil attitudes toward the program. Thirteen (13%) rate the pupil attitudes as fair.

f. Seventy-three percent (73%) of the elementary principals rate the communication among regular classroom teachers and Title I math teachers as excellent (38%) and good (35%). The remaining twenty-seven percent (27%) rated it as fair.

g. All but one of the principals wish to continue this program in their schools.

Secondary Level

a. Eighty-seven percent (87%) of the secondary principals rated the program design for meeting remedial needs of pupils as excellent (50%) and good (37%).

b. Eighty-seven percent (87%) of the secondary principals rated the effectiveness of individualized instructional procedures as excellent (50%) and good (37%).

c. All of the secondary principals rated the student selection criteria as excellent (19%) and good (81%).

d. Ninety-three percent (93%) of the secondary principals rated the program implementation in Title I math classrooms as excellent (31%) and good (62%).

e. Eighty-one percent (81%) of the secondary principals rated the pupil attitudes toward the program as excellent (31%) and good (50%). The remaining eighteen percent (18%) rated it as fair (12%) and poor (6%).

f. Eighty-seven percent (87%) of the secondary principals rated the communication among regular classroom teachers and Title I math teachers as excellent (37%) and good (50%).

g. All of the secondary principals wish to continue the program in their schools.

(3) Title I Math Questionnaire for Classroom Teachers

This questionnaire was administered to approximately two hundred (200) classroom teachers whose students attend Title I math classes. These data indicated the following major conclusions:

a. Ninety-seven percent (97%) of the students also received math instruction in the regular classroom in addition to the Title I math instruction.

b. Seventy-eight percent (78%) of the teachers indicated the Title I math teacher had shared diagnostic information or reports of progress in the Title I math classes.

c. Seventy-three percent (73%) of the teachers saw evidence of instructional progress as a result of this program.

d. Eighty percent (80%) of the teachers indicated that the combination of the regular class and Title I math class best meets the mathematics instructional needs of remedial math students.

(4) Title I Math Parent Questionnaire

This questionnaire was administered to approximately two hundred (200) parents of students participating in the program. The following

major conclusions were drawn:

a. Ninety-four percent (94%) of the parents felt this program had helped their children do better in school.

b. Seventy-four percent (74%) of the parents felt they needed to know more about the program.

c. Seventy-five percent (75%) of the parents indicated their children talked about their experiences in this program.

d. Eighty-nine percent (89%) of the parents thought their children were in one of the programs they need most.

e. Seventy-eight percent (78%) of the parents thought their children liked school more than last year as a result of this program.

f. Eighty-eight percent (88%) of the parents indicated they would like for their children to continue participating in this program.

Additional information and comments from these questionnaires are found in Tables 16-21 of this report.

## Monitoring Procedures

Frequent monitoring by the project director, resource teacher and the research assistant provided feedback on the Title I math classes. Reports from the project director and resource teacher indicated that the performance objectives were being met in most of the classes. Principals and curriculum teachers were also encouraged to monitor all aspects of program operation.

## Inservice and Professional Growth Activities

Several inservice activities were held for newly assigned teachers. These teachers were given an overview of the various aspects of Title

I. The remaining days were spent in workshops to acquaint the new teachers with the Individualized Mathematics System published by Ginn and Company, a Xerox Education Group Company. Representatives from Ginn and Company, the project director, and the resource teacher gave instructions and aided the teachers in implementing the program in their schools. An evaluation instrument was administered to each participant at the completion of each inservice activity to determine the success of the presentations. The analysis of this instrument indicates that the inservice activities have been successful in meeting the needs of the teachers. Reports on the findings of two inservice activities held are found in Appendices A and B of this report. One outstanding feature of the second inservice was the visitations by the new teachers to IMS classes already in operation. Responses from these teachers concerning the visits indicated this was an invaluable experience for them. (These visits were not made during the first inservice.)

All Title I math teachers participated in a workshop at the Reading Center. This two-day session, planned in accordance with the system-wide provision that all teachers participate in Center activities, was designed to provide math teachers with instructional techniques for helping pupils whose problems in math are compounded by reading difficulties. Dr. Claire Henry, Director of the Reading Center, provided these instructional techniques to be used by the teachers in helping their students. Dr. Henry also administered a questionnaire to the teachers. These results are found in Appendix C of this report.

Professional growth meetings have also been held for Title I math teachers since the program was implemented to deal with other topics

related to implementation, operation, instruction, and supportive services. At least 80% of the teachers have attended each of these meetings.

TABLE 16

TITLE I MATH QUESTIONNAIRE FOR PROJECT TEACHERS

1. Grade Level - Elementary

| | Excellent | | Good | | Fair | | Poor | | NR* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| a. Program design for meeting remedial needs of pupils | 37 | 48.1 | 38 | 49.3 | 1 | 1.3 | 0 | 0 | 1 | 1.3 |
| b. Effectiveness of individualized instructional procedures | 38 | 49.3 | 35 | 45.5 | 3 | 3.9 | 0 | 0 | 1 | 1.3 |
| c. Student selection criteria | 18 | 23.4 | 43 | 55.8 | 15 | 19.5 | 1 | 1.3 | 0 | 0 |
| d. Pupil attitudes toward this program | 24 | 31.2 | 47 | 61.0 | 5 | 6.5 | 1 | 1.3 | 0 | 0 |
| e. Information and/or feedback from personnel responsible for the operation and implementation of this program | 52 | 67.5 | 22 | 28.6 | 1 | 1.3 | 0 | 0 | 2 | 2.6 |
| f. Cooperation with regular classroom teacher | 20 | 26.0 | 46 | 59.7 | 10 | 13.0 | 1 | 1.3 | 0 | 0 |

*No Response

Total Number of Elementary Teachers Responding - 77

2. What changes, if any, would you recommend in program design, implementation, and operation?

"I feel that the IMS Activity Sheets for each level should be incorporated in the program. A sample of three of these kits are utilized at Guthrie."

"There is a need for a different type of record keeping especially for the students. (Takes too much paper)."

"Evaluation form should be more like the student profile form."

"It is hard conferring with classroom teachers, concerning a child's progress, when our math programs don't coincide."

"More manipulatives needed. Mistakes in folders and answer sheets should be corrected. Fractions III, Multiplication IV (distributive principle) and Numeration VI should be re-evaluated."

"Supplementary materials coordinated with the IMS program that off[illegible] some diversion from the regular folders."

"I think that if not as much stress was put on completing a certain number of units, that more time could be spent on teaching addition, subtraction, multiplication, and division."

"Children selected by a resource team. Children graded on basis of ability grouping in the (homeroom) classroom."

"I would like more responsibility in grading IMS students."

"Present program is well-organized and seems to meet children's needs."

"I think that at the beginning of the year, more time should be spent on the multiplication facts and drilling them."

"Improved selection and grouping criteria so that seminar activities could be more effective."

"Student selection criteria - Many of the students that were selected for the program were not academically able to master the materials because of their academic ability. Therefore they demanded too much of the teacher's time explaining things that they were just not able to understand. I have three children that haven't learned to fill out the prescription sheet yet."

"More orientation of classroom teachers and parents (lack on my part in some areas)."

"Each teacher should be required to teach only one grade."

"I would like some better method of getting pre-tests and post-tests. Some of the units (i.e. Frac. III and Num. IV) are always running out because so many children need them. Could we get a large supply of these key units initially?"

"The unit strands should be used in cooperation with the homeroom teacher. (Ex. Fractions when the teacher is teaching fractions.)"

"Begin implementing program in the primary grades."

"I would like for commercial math games to be provided for use in the classroom so well as various measuring devices."

"There would be better continuity of learning if it were possible to teach a strand through all the levels before teaching the next strand. Presently by the time a child has finished one level - he has forgotten the strand for the next level."

"More inservice in small groups with consultants who developed and/or wrote materials in skill folders."

"I feel the children need to be given homework to reinforce what they have learned in class."

"Could we have interest groups at the city wide professional growth programs rather than sitting in on reading sections?"

"If possible, more consumable materials."

"Set up specific dates for IMS teachers to visit IMS classes in different schools. Definite work dates after school when we could use the laminating machines at the reading center."

"Since I have worked with the IMS only since April, 1975, I do not feel competent in giving a true evaluation of the program. However, after 14 years of teaching, I can say that I have found IMS to be seemingly one of the best programs for individualized assistance. However, even then, much depends on the teacher and her ability to supplement and maintain interest when necessary."

"I think the program is very well designed. I have had no problems, what-so-ever. Everything is running very smoothly."

"Rename pre and post tests as Direction Finders or any name that would eliminate the desire for students to cheat."

"Fractions Level III needs to be redone to reflect what post-test asks."

"Several non-readers were selected for IMS at our school. This should not occur next year."

"Having eight students per session seems to look better than any number above that."

3. Please state any additional comments, suggestions, or recommendation which would assist us in evaluating this program.

"If IMS students were tested on all the units they covered in a school-year, we could determine how much of this information was retained by the student and how much progress was made."

"Work should be available that children can carry home so that the parent can see what the child is doing. The reporting system should be improved upon. The present take home report does not give sufficient information for the parent to see what the child is doing."

"The over-all program is good."

"It's too bad that you can't have a year's experience when you begin this program. I will feel much more comfortable and confident next year with the program and the children."

"I think that at the end of the year, we should give the placement test over, to see how much progress the students have made."

"Each school differs, but I feel hall passes for children leaving classrooms would cut down on confusion."

"There should be another set of post-test for each topic."

"I think a more careful assessment of the needs of each school should be made. For instance, my school has so many POPS and resource teachers, that it was very hard to find enough youngsters to fill 3 classes. Meanwhile, there are larger schools with no POPS, very few resource teachers, and only one or two IMS teachers."

"If we knew at the beginning of the year what information would be needed by research we could keep better and more accurate records."

"We need to have a workshop and provide materials for the teachers to make the materials needed to play the games and exerciese that are on the folder backs."

"I need suggestions to motivate pupils to better work and study habits and better conduct."

"Spring Collection of referrals should void delay in getting started next fall."

"The strong support from the principal helps to make a program successful."

"At the beginning of the year I would give addition, subtraction, multiplication and division fact sheets to be timed. Then give the same tests at mid-term and again at the end of the year."

"I think there should be some type of reading test administered prior to placing a student in the program. Some of the students could do better if they were able to read with understanding."

"My children have been very interested in the math program. Teachers have referred more children than I can take for next year."

"I think it is very good as it is."

"Limit class time of 4th graders to 50 minutes."

4. If you are teaching next year, would you like to continue working in this program, either at your present school or another school?

| | F | % |
|---|---|---|
| Yes | 77 | 100.0 |
| No | 0 | 0 |

TABLE 17

TITLE I MATH QUESTIONNAIRE FOR PROJECT TEACHERS

1. Grade Level - Secondary

| | Excellent | | Good | | Fair | | Poor | | NR* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| a. Program design for meeting remedial needs of pupils | 12 | 60.0 | 6 | 30.0 | 2 | 10.0 | 0 | 0 | 0 | 0 |
| b. Effectiveness of individualized instructional procedures | 10 | 50.0 | 10 | 50.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| c. Student selection criteria | 0 | 0 | 10 | 50.0 | 10 | 50.0 | 0 | 0 | 0 | 0 |
| d. Pupil attitudes toward this program | 2 | 10.0 | 14 | 70.0 | 3 | 15.0 | 1 | 5.0 | 0 | 0 |
| e. Information and/or feedback from personnel responsible for the operation and implementation of this program | 6 | 30.0 | 10 | 50.0 | 2 | 10.0 | 1 | 5.0 | 1 | 5.0 |
| f. Cooperation with regular classroom teacher | 12 | 60.0 | 7 | 35.0 | 1 | 5.0 | 0 | 0 | 0 | 0 |

*NR - No Response

Total Number of Secondary Teachers Responding - 20

2. What changes, if any, would you recommend in program design, implementation, and operation?

"I believe that the students should be taken from their arithmetic class instead of art or music."

"Need a better system of evaluating students and form for reporting students progress to parent. The present progress report does not motivate the student. They want grades reported."

"There needs to be a wider variety of instructional materials to supplement the GINN program."

"Earlier selection of students; bulletin board suggestions."

"I think the IMS teacher should work on the same topics that are being covered in the regular math class at the same time."

"There should definitely be either an IQ cut off or some way of testing whether students can handle the mechanics of the system.

"I would like to have a teacher's aide. Even though the number of students is small they require a great deal of attention, often than one person can give."

"Secondary students should be pulled from Mathematics classes only prior to the following school year."

"That a student be able to go from one level to another when the need arise for greater understanding in an area."

"Funds should be appropriated for special projects, such as field trips, outings, etc."

"I have been very pleased with all aspects of the program."

"Filmstrips for secondary level are needed for orientation period."

"Students should be given grades. Students should not be pulled from any classes. Only those students who want to improve themselves should be chosen."

"Some of the units (e.g., place values of numbers) require too much teacher instruction before the children know what to do and how to do it."

"Give screen test to students that are recommended for a second year. Also take only those who are willing to work."

"In junior high level I feel this program would be much more effective if students were completely removed from regular math class."

"Seventh grade students that don't complete the folders should go one semester in the eighth grade and another set of seventh graders should come second semester."

3. Please state any additional comments, suggestions, or recommendations which would assist us in evaluating this program.

"The students have a better attitude toward the program when they come from their math class. They are willing to do more work. The teachers did not like the idea of the students having two math classes."

"There needs to be another means of evaluating this program than the Metro Achievement Test. Also data should be compiled on all students and discussed."

"Teachers should be oriented sooner, have two weeks to prepare, interview students."

"It would be good to administer the IMS placement test during the final exam week to see how they have retained the materials they have passed."

"Two units a month should not be the only criteria for evaluating student progress. Consider a half and one unit also."

"Make note of beginning level and ending level on achievement test. Make sure each student has an opportunity to work in all areas."

"I find the program stronger (more effective) as I, myself, become more comfortable with it. I do feel, however, that there should be more "ratio and proportion" for the better students."

"Send a copy of profile results with the progress report every six weeks, so the parent can see what the child is doing."

"Parents should be sent notices from the Board about the program and encouraged to visit school rooms twice a month."

"This program makes it easy to keep the interest of those students who would be discipline problems in the regular classroom; because they would not be able to keep up. I'm impressed with the program."

4. If you are teaching next year, would you like to continue working in this program, either at your present school or another school?

| | F | % |
|---|---|---|
| Yes | 19 | 95.0 |
| No | 1 | 5.0 |

If no, why not?

"Lack of academic control of students. The IMS Program is designed for students who have a desire to learn, and not for those who are apathetic towards math. The student don't consider the program a "real class", and consequently do not want to work."

TABLE 18

TITLE I MATH QUESTIONNAIRE FOR PRINCIPALS

Grade Level - Elementary

Number of Teachers

| | F | % |
|---|---|---|
| 1 | 10 | 27.0 |
| 2 | 17 | 45.9 |
| 3 | 5 | 13.5 |
| NR | 5 | 13.5 |

| | Excellent | | Good | | Fair | | Poor | | NR* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| a. Program design for meeting remedial needs of pupils | 14 | 37.8 | 22 | 59.4 | 1 | 2.7 | 0 | 0 | 0 | 0 |
| b. Effectiveness of individualized instructional procedures | 14 | 37.8 | 22 | 59.4 | 1 | 2.7 | 0 | 0 | 0 | 0 |
| c. Student selection criteria | 10 | 27.0 | 24 | 64.9 | 3 | 8.1 | 0 | 0 | 0 | 0 |
| d. Program implementation in Title I math classrooms | 12 | 32.4 | 22 | 59.4 | 2 | 5.4 | 0 | 0 | 1 | 2.7 |
| e. Pupil attitudes toward this program | 16 | 43.2 | 16 | 43.2 | 5 | 13.5 | 0 | 0 | 0 | 0 |
| f. Communication among regular classroom teachers and Title I math teachers | 14 | 37.8 | 13 | 35.1 | 10 | 27.0 | 0 | 0 | 0 | 0 |
| g. Information and/or cooperation received from personnel responsible for the operation and implementation of the Title I math program | 24 | 64.9 | 12 | 32.4 | 1 | 2.7 | 0 | 0 | 0 | 0 |

*No Response

Total Number of Elementary Principals Responding - 37

2. In your opinion, was there adequate provision for teacher orientation and inservice?

| | F | % |
|---|---|---|
| Yes | 35 | 94.6 |
| No | 2 | 5.4 |

3. In your opinion, what are some of the particular strengths of this program?

"The fact that a child can succeed while moving at his own pace."

"Perhaps the greatest strength is that the small classes allow the teacher to give more time to each student and allow the students to feel freer to respond, therefore allowing him to do his best work. Another is that the placement tests allow the teacher to diagnose specific weaknesses and prescribe work which will strenghthen the weaknesses."

"The child can work on his individual level, and develop confidence and better self concepts about his ability, thus, becoming self-relient."

"Materials; supervision; selection of teachers."

"The whole program, success or failure, depends on the teacher. We were very fortunate to have had an excellent teacher."

"It is easy to use a variety of math activities each day."

"Individualization of instruction allows each student to progress at his own ability rate."

"The program design promotes positive attitudes toward math and working independently."

"Most of the students are showing an interest and improvement in the regular classroom carried over from the Title I math."

4. In your opinion, what are some of the particular weaknesses of this program?

"The real weakness I see is the fact that this math cannot replace math instruction in regular classroom."

"Time it takes to get going in the fall."

"I don't recall any weaknesses."

"More supplementary materials could be utilized."

"Too limited needs to be expanded."

"Too much time spent on grading tests. Classes should remain as small as possible. More IMS teachers are needed."

"Elementary children waste time going from the regular classroom to the math teacher and coming back to the classroom."

"Student Selection."

"Some material is too difficult and needs more explanation; better wording on tests; periodic test to evaluate their performance during the year."

"Better correlation between Title I math content and regular math content for individual student(s)."

"Great teacher absenteeism. Too few students are reached."

"Since reading ability is not a criteria for selection of participants in IMS, some students experience difficulty with the reading part of the program."

"Lack of parent concern."

"Teachers of Title I math should give the grade on the REPORT CARD for those students working on very low levels and are confused in regular classroom math."

5. What criteria did you consider in judging program effectiveness?

"Children's attitude and work habits. Carry-over to regular classroom."

"The majority of the students have met the objectives set up in September by the teacher (IMS). The students are very enthusiastic about the program and feel good about themselves because of the progress they've made. The parents have expressed a desire to have their children remain in IMS another year because they can see the progress made."

"Observation of classroom."

"Achievement test scores."

"Teacher conferences."

"Teacher in-put and classroom participation. In addition to the aforementioned improvement in math was shown on the Metropolitan Achievement Test given in March."

"Comments from the regular teachers with pupils involved in the program-relationship between Title I math and regular classroom teachers."

6. What changes, if any, would you recommend in program design, implementation, and operation?

"Let this be the basic, rather than supplementary, math program. Could it be extended to 3rd grade if there is space?

"Only that more skill-related concerete materials be provided for Levels I and II."

"I am satisfied with the implementation and operation."

"A teacher for 2nd, 3rd, 4th grades and one for 5th and 6th grade pupils."

"Add another teacher."

"The operation of the program should be flexible enough to allow the continued participation of those students who are presently in IMS. No major changes are necessary."

"I'd like to see the math teachers work with the Title I children in the regular classroom."

"Elimination of teacher absenteeism. Enclusion of more students."

"A notation on the report card stating progress of the subject."

7. Do you wish to continue this program in your school?

| | F | % |
|---|---|---|
| Yes | 36 | 97.3 |
| No | 1 | 2.7 |

If no, why not?

"Lack of space."

8. Please state any additional comments, suggestions, or recommendations which would assist us in evaluating this program.

"We are very pleased with the program as it is. If all teachers could see the benefits of the program, I feel we would have over-all cooperation."

"I am happy with the Title I Individualized Mathematics Program."

"Children on grade level and above can benefit from this program."

"I would like to select a teacher, possibly from my present staff to teach an additional class next year."

"We have had the program only this semester and it is somewhat early to tell about pupil progress."

"Keep Good Teachers!"

"Principals should get copies of non-instructional materials that are sent to teacher."

"There should be some kind of test to measure progress at the end of the year."

"Eliminate questionnaires that ask for comment and others as much as possible."

TABLE 19

TITLE I MATH QUESTIONNAIRE FOR PRINCIPALS

Grade Level - Secondary

| | Excellent | | Good | | Fair | | Poor | | NR* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| a. Program design for meeting remedial needs of pupils | 8 | 50.0 | 6 | 37.5 | 1 | 6.2 | 0 | 0 | 1 | 6.2 |
| b. Effectiveness of individualized instructional procedures | 6 | 37.5 | 8 | 50.0 | 1 | 6.2 | 1 | 6.2 | 0 | 0 |
| c. Student selection criteria | 3 | 18.7 | 13 | 81.3 | 0 | 0 | 0 | 0 | 0 | 0 |
| d. Program implementation in Title I math classrooms | 5 | 31.2 | 10 | 62.5 | 0 | 0 | 1 | 6.2 | 0 | 0 |
| e. Pupil attitudes toward this program | 5 | 31.2 | 8 | 50.0 | 2 | 12.5 | 1 | 6.2 | 0 | 0 |
| f. Communication among regular classroom teachers and Title I math teachers | 6 | 37.5 | 8 | 50.0 | 2 | 12.5 | 0 | 0 | 0 | 0 |
| g. Information and/or cooperation received from personnel responsible for the operation and implementation of the Title I math Program | 9 | 56.2 | 6 | 37.5 | 0 | 0 | 0 | 0 | 1 | 6.2 |

*No Response

Total Number of Secondary Principals Responding - 16

2. In your opinion, was there adequate provision for teacher orientation and inservice?

| | F | % |
|---|---|---|
| Yes | 14 | 87.5 |
| No | 1 | 6.2 |
| NR | 1 | 6.2 |

3. In your opinion, what are some of the particular strengths of this program?

"Small classes provide more individualized attention. The method of selecting materials and students. The attitude of the IMS teacher is commendable."

"Establishes a one-to-one relationship between pupils and teacher."

"The program gives youngsters who have been lost in math for several years an opportunity to pick up where they left off and catch up."

"The teacher, program director and the materials."

"The design and structure of the program is good."

"Provided appropriate remadiation. The students enjoyed attending the class."

4. In your opinion, what are some of the particular weaknesses of this program?

"Having the right person working the program at the school level."

"Facilities for meeting the class were less than satisfactory."

"The program failed to clearly establish criteria that would distinguish Resource child from that of a Title I student. Guidelines should be clearly stated so that a margin of success can be more carefully predicted."

"Teacher can only reach fifty children."

"Grading between regular classroom teachers and Title I teachers has contributed some problem."

"The program has a stigma of being the place for dumb children and/or retarded children."

5. What criteria did you consider in judging program effectiveness?

"Personal observation. Conversations with Title I teacher."

"The attitude of students in the program. The response of teachers who referred students for the program."

"Observation of class-familiarization with materials-personal knowledge of students-progress in regular classes. Observation of teacher."

"Pupil-teacher relationships; cognitive growth, affective growth."

"Metropolitan Achievement Test Scores."

6. What changes, if any, would you recommend in program design, implementation, and operation?

"Consider allowing this work to substitute for regular math course; while enrolled."

"Earlier identification of students-larger class assignment as a class subject and graded."

"A consulting teacher be employed to work in and out of classroom where students are having problems."

"As in most funded programs, the building principal needs to be in on the planning; changed with monitoring procedures and feedback activities."

"A communication system with the parents and children that certainly would eliminate problems."

"Provision for the program to include a teacher's aide; Addition of another Title I math teacher."

"School administrators and counselors should be assured that the program will be in operation at a particular school for the following school year."

7. Do you wish to continue this program in your school?

| | F | % |
|---|---|---|
| Yes | 16 | 100.0 |
| No | 0 | 0 |

8. Please state any additional comments, suggestions, or recommendations which would assist us in evaluating this program.

"This course could replace the regular math class for some students, thus allowing them to experience success more readily on their level. I am in favor of this program and would like to have another position added."

"Please pick the teachers with a little more care."

"The program worked very well since students were pulled from math classes only, and given grades for assignments."

"Give us more programs that are specific in purpose and are evaluated in terms of pupil progress."

TABLE 20

TITLE I MATH QUESTIONNAIRE FOR CLASSROOM TEACHERS*

1. What grade level do you teach?

| Grade(s) | F | % |
|---|---|---|
| 4 | 70 | 37.6 |
| 5 | 60 | 32.3 |
| 6 | 51 | 27.4 |
| 4&5 | 2 | 1.1 |
| 5&6 | 2 | 1.1 |
| 4,5&6 | 1 | .5 |

2. How many of your students attend Title I classes? 1685

3. How many of these students also receive mathematics instruction in your classroom? 1644 (97%)

4. When were your students first assigned to Title I math classes?

| | F | % |
|---|---|---|
| Prior to January, 1975 | 132 | 71.0 |
| Beginning January, 1975 | 51 | 27.4 |
| No Response | 3 | 1.6 |

5. Has the Title I math teacher shared with you any diagnostic information (profile sheets) or any reports of progress in the Title I math classes?

| | F | % |
|---|---|---|
| Yes | 146 | 78.5 |
| No | 40 | 21.5 |

*Total Number of Teachers Responding - 186

6. Do you see any evidence of instructional progress as the result of your students' participation in Title I math?

| | F | % |
|---|---|---|
| Yes | 137 | 73.6 |
| No | 15 | 8.1 |
| Undecided | 34 | 18.3 |

7. Which of the following best meets the mathematics instructional needs of remedial math students in your class?

| | | F | % |
|---|---|---|---|
| (a) | Regular class only | 19 | 10.2 |
| (b) | Title I math only | 13 | 7.0 |
| (c) | Combination of regular class and Title I math | 150 | 80.6 |
| (d) | No Response | 4 | 2.1 |

8. If you have additional comments or suggestions relative to the Title I Math Program, please note them below.

"I feel the Title I Math Program is very helpful to students due to the fact the teacher works with math only and can give all the time needed to problems."

"There should be more correlation between the Title I math class and the regular classroom math. I can't see much progress that the students have made."

"I feel that the children who attend the math program should have follow up work in the regular classroom."

"It would be helpful to know what the students are doing in Title I class - more communication between teachers."

"I believe that this is a worthwhile program and has been beneficial to my students."

"If the math teacher could work more with the grade curriculum, the children might get more benefit and it might hlep the teacher more."

"Perhaps, scheduled periods in which the teachers share diagnostic information and reports of the student's progress."

"In trying to accommodate all pupils who attend special classes these children do miss other subject areas that I consider important also."

"More eligible students should be included in the program. Some students continued the program this school year because they were in it last year. They could have been placed in their regular classroom for math."

"The Title I Math Program seems to be working very well for the four students in my class. I think this is because they are all on different levels in Math and this program enables them to learn at their own rate."

"Math teachers should reinforce regular classroom work or math teachers should be totally responsible (including grades) for students attending their classes."

"Some activities seem somewhat unrelated to strengthening of math processes in: dancing, pipe stem cleaner art, etc."

"I feel the Title I program would be more effective if we could ability group - So that a child does not come back into a multi-group and be expected to perform on grade level and receive "grade level" grades. Levels should be shown on report cards."

"Really wish there was more opportunity to coordinate the two math programs. My students have really enjoyed and benefited from these classes."

"Most of my children are not getting the basic skills, such as addition, subtraction (regrouping), multiplication and division. They work on geometry and things of that nature."

"I think this is an excellent program. I wish more 4th graders could be included next year."

"This is the best special program I have ever seen in the Memphis City Schools. My students have made tremendous gains!"

"I feel they are doing an excellent job. The pupils love to go. They are eager to share what they've learned."

"This programs helps to provide for individual differences. The children enjoy attending this class. It is a good supplementary program."

"It is great! A Salvation!"

"I wish more children could be included. I have several more that would qualify."

"I feel the Title I Math Program is excellent in helping students reach their potentials in math. I have one student in my class who was in the program last year and no longer needs it. He is doing excellent in math."

"I do not think a student should be excluded from math (Title I) because he is in the Resource Program."

"My math class is individualized and this simply interferes with their daily schedule."

"I feel the students would benefit tremendously if they were given a longer class period."

"No for #6 based on fact that subject matter for the program unrelated to that in the classroom."

"I do not feel that we have had the program long enough to give a complete evaluation."

"My evaluation is not too accurate. I've only been working with these students since February 24, 1975."

"The Title I Math teacher at our particular school always get together with me for a conference as to what is happening in math class and set aside sometime of the week to enhance what is being taught in the classroom, and this has helped tremendously.

"Remedial instruction should begin in primary grades."

"I have only one student from my math class who attends this program. I think the teacher is doing a very good job, but the child is just not able to retain. Some of my basic language arts students go to this class and I have noticed a carry-over in that they are able to go to the programed reading kit and select materials independently. I think their training in the math program has helped them in this respect."

"Math kits or ready to use math materials used in Title I Math class be given to regular classroom teachers as a follow-up of what Title I Math teacher has worked on or presented."

"I would like to see the Math Program used last summer implemented in this program."

"Students have shown much more interest in regular classroom and are improving rapidly."

"This program aids instructional progress best when the programs of the classroom teacher and that of the Title I Math teacher augments each other."

TABLE 21

TITLE I MATH PARENT QUESTIONNAIRE

| Question | Yes | | No | | NR* | |
|---|---|---|---|---|---|---|
| | F | % | F | % | F | % |
| 1. Do you think that this program has helped your child do better in school? | 143 | 94.7 | 5 | 3.3 | 3 | 2.0 |
| 2. Do you feel you need to know more about the program you child is in? | 113 | 74.8 | 33 | 21.8 | 5 | 3.3 |
| 3. Have you talked with your child's Title I math teacher this year? (either by phone or personal contact) | 64 | 42.4 | 85 | 56.3 | 2 | 1.3 |
| 4. Does your child talk about his experiences in this program? | 114 | 75.5 | 33 | 21.8 | 4 | 2.6 |
| 5. Do you think the Title I math program is one of the programs your child needs most? | 135 | 89.4 | 9 | 6.0 | 7 | 4.6 |
| 6. As a result of the program, do you think your child likes school more than last year? | 118 | 78.1 | 25 | 16.5 | 8 | 5.3 |
| 7. Would you like for your child to be in the program next year? | 133 | 88.1 | 12 | 7.9 | 6 | 4.0 |

* NR - No Response
Total Number of Parents Responding - 151

PLEASE MAKE ADDITIONAL COMMENTS OR SUGGESTIONS THAT YOU HAVE CONCERNING THE PROGRAM.

"As a result of this class, Jeffrey's math has improved."

"I will try to help her with her math. But she should be made to study harder."

"I think the program is good and I would like for Tyrone to participate in this program next year."

"I have no comments but hope Jackie keeps up the good work."

"I would like in the following year to keep in touch with my son's math teacher and to be kept up to date on his program."

"Very pleased with the program."

"We appreciate all that's been done and thank you."

"This program has been especially good for Donna. The teaching is done on a more individual basis."

"My comment is that he has no homework. I think a child needs homework where his or her parents could help them. That would help them to improve."

"Sandra says she really loves math this year. And it really has helped her. She wants to be in the math program next year. She really likes it. I would like for her to be in the math program next year to. Thank you."

"I feel I need to know more about the program and how it operates. Reginald has really improved. I just wish you had some type of reading program doing the same thing."

"I'm really glad Tommy was in the Title I Math program this year. It has helped him a lot. He makes better grades in math this year than ever before. I hope he can be in it again next year."

"I think this program is a great help to Larry, and he likes it very much. I am hoping Larry will do as well in the program in the future as he has in the past."

"I think it's a real nice program. There should be more programs like it. And I certainly want him to be in as many programs like this as possible."

"I think that the program is wonderful and very helpful. They should try to get a program like this in Jr. High. Thanks a million for putting my child in this Title I math class."

"Math is my son's weakest course in school, and I feel that he has greatly progressed from being in the Title I math class, especially in the latter part of this school year."

"The program has certainly enhanced Karl's mathematical abilities. He's become much more acquainted with the subject, naturally making him more enthused. I hope he can continue in the program, because he's enjoyed this school year much more than the past year. Mathematics is his weakest subject and with this help I think in the future he will do even better."

"If this program will help Rickey I think he needs it."

"Any time a child gets personal help they need it. I was no help because I stopped at the 11th grade. God Bless you and I hope you keep up the good work."

"I feel that this program has given Amy much needed confidence in understanding and working math problems. Thanks!"

"I want to know if you all teach other courses too. If so I would like for him to participate in them all."

"She has not made any improvements to me. I do not feel it is helping her at all. I can tell the difference. She doesn't show any progress."

"Donna has enjoyed participating in the math class this year. She has more self confidence, when doing her math lessons."

"Andre does not like school. I have talked to him, trying to make him see that his education means more to him than anything in the world. With your help I think together we can put him through."

"Mark complains that he has to go to math at the time they are having arithmetic in his homeroom; as a result he misses out on some of the instructions the teacher gives. It would be nice if it was held during some of his free time."

"Michele needs this kind of program because she has passed from grade to grade without learning what was being taught. I feel that this has partly been the blame of the teacher because they have refused to take time with those children who do not learn rapidly. However when Michele has to leave her regular class, she misses some of the lessons there which she has homework on and she comes home unable to do this homework."

"I must confess that I am not completely informed about Title I math, but from the little I've learned after talking to Barbara's teacher, it is a great access to our children that are in school and having difficulty in math. Barbara has always been weak in her math. I feel and believe that Title I is wonderful for her and will benefit her in the end. I appreciate all the efforts that the Board and our teachers are trying to do in educating our children and giving them an equal chance for quality education."

## CONCLUSIONS

Based on the findings in this report, the following conclusions were drawn:

1. All grades participating in the program achieved Objective 1. (mean accomplishment of 18)

2. Only grade 6 made statistically significant gains over the control group students, thus achieving Objective 2. Grades 4-7 made gains but they were not statistically significant.

3. All grades in the program demonstrated positive attitudes toward themselves and the math program; therefore Objective 3 was accomplished.

4. Students, parents, project teachers, classroom teachers, and principals were very supportive of the program.

## RECOMMENDATIONS

As a result of this study, the following recommendations are made:

1. Continue to improve communications among project personnel, principals, regular classroom teachers, general instructional consultants, and other administrators in an effort to provide coordinated services to meet special educational needs in mathematics; plan series of informal workshops for this purpose.

2. Intensify individualized instructional services, with supplementary activities for identified children, both in the Title I and regular classrooms, and through parental involvement.

3. Implement classes as early as possible, without excessive loss of time for student selection and orientation.

4. Allow secondary pupils to receive credit for grades for Title I instructional activities.

5. Revise report form for parents to reflect pupil progress during each report period.

*DIVISION OF RESEARCH AND PLANNING*

MEMPHIS CITY SCHOOLS

MEMPHIS, TENNESSEE 38112

September 4, 1975

FROM: Linda F. Harris, Evaluator
Title I Individualized Mathematics Program

TO: All Concerned

SUBJECT: Error in Title I Individualized Mathematics
Final Evaluation Report, 1974-75.

Please delete Table 15 on Page 29. This table was inserted in error.

Thank you for your cooperation.

LFH/bk